ACCESSION #: 9603120449

LICENSEE EVENT REPORT (LER)

FACILITY NAME: Catawba Nuclear Station PAGE: 1 OF 13

DOCKET NUMBER: 05000414

TITLE: LOSS OF OFFSITE POWER DUE TO ELECTRICAL COMPONENT

FAILURES

EVENT DATE: 02/06/96 LER #: 96-001-00 REPORT DATE: 03/07/96

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100%

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:

50.73(a)(2)(i), 50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: D. P. Kimball, Safety Review TELEPHONE: (803) 831-3743

Group Manager

COMPONENT FAILURE DESCRIPTION:

CAUSE: SYSTEM: COMPONENT: MANUFACTURER:

REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

Unit Status: Unit 2 - Mode 1 (Power Operation) at 100 percent power. Event Description: On February 6, 1996, at 1231 hours, ground faults on the resistor bushings for 2A Main transformer X phase potential transformer and 2B Main Transformer Z phase potential transformer resulted in a phase to phase fault. Protective relay actuation on both Main Transformers resulted in a loss of offsite power. The reactor tripped on Reactor Coolant Pump bus underfrequency. As a result of the blackout, 2A Emergency Diesel Generator started and sequenced on all required loads. 2B Emergency Diesel Generator was

inoperable due to battery charger repairs, therefore B Train 4Kv Essential Bus did not automatically reenergize. Cold auxiliary feedwater being automatically supplied to the steam generators, in combination with the effects of various steam loads, resulted in a Low Steamline Pressure Safety Injection. At 1522 hours, B Train 4Kv Essential Bus was energized from 2B Emergency Diesel Generator. By 2000 hours, both 4Kv Essential Buses were being supplied from train related offsite power sources.

Event Cause: The root cause of the event is attributed to the application of the type of resistor bushings used. A deficiency lies in the use of these resistor bushings in a vertical orientation at the bottom of vertical branch-lines of the Isolated Phase Bus ducting leading to the potential transformers. The outdoor location and lack of air flow within this portion of the ducting, is conducive to moisture intrusion and corrosion. A contributing factor was the lack of adequate preventative maintenance to prevent moisture intrusion/condensation problems.

Corrective Action: All resistor bushings in this application were replaced on both Catawba units with bushings having external resistors. The current preventative maintenance programs for the IPB system and transformer yard equipment will be enhanced to ensure continued equipment reliability. Enhancements should include measures to protect against the effects of moisture and condensation.

BACKGROUND

The main power system [EIIS:EL](EPA) at Catawba utilizes a dual generator [EIIS:GEN] breaker (EIIS:52] design and two half sized step-up transformers [EIIS:XFMR], which along with the associated auxiliary transformers serve as the offsite power sources when the generator is not on-line. An isolated phase bus [EIIS-IPBU](IPB) system is used to interconnect the generator and the two transformerzones.

Protective relaying [EIIS: ED](ERD) is arranged in three zones, i.e. the generator zone, transformer zone A, and transformer zone B. The protective relaying in the generator zone overlaps with each transformer zone such that the associated generator breaker is included in both. The system is designed such that a single fault should result in tripping either a single zone, or the generator and one of the transformer zones.

The generator is wye connected and has a high impedance grounding system to limit ground fault current to approximately 11.7 amperes. The low voltage windings on the step-up transformers and the high voltage windings on the auxiliary transformers are delta connected. A set of wye connected potential transformers [EIIS:IPT](PT) are connected to the IPB on each transformer zone to supply protective relaying and metering equipment. If a ground occurs on one phase, the voltage on the other 2 phases will rise approaching phase to phase voltage with respect to ground reference.

In an IPB system, a phase to phase fault cannot occur except through ground. This can only result if a phase to ground fault occurs on two phases. For a phase to phase fault, the fault current is limited only by the system impedance and can be as high as approximately 275,000 amperes.

Electrical power is assured to each of the 4Kv Essential Buses, ETA and ETB, by a train related Emergency Diesel Generator [EIIS:DG](EQA). Blackout actuation logic is provided by a Diesel Generator Load Sequencer [EIIS:EK](EQB) which monitors the voltage on its respective 4Kv Essential Bus. Upon sensing an undervoltage on two out of three phases on the bus, the sequencer starts the associated D/G and continues to monitor bus voltage. If bus voltage is still low after 8.5 seconds following the initial undervoltage, the sequencer load sheds the bus, energizes the bus from the D/G, and sequences on blackout only loads in a prescribed order.

A blackout of either 4Kv bus will automatically start the Turbine Driven Emergency Feedwater Pump. If a subsequent SI signal is received after blackout actuation, the sequencers will shed the blackout only loads and sequence LOCA loads onto the essential Buses. (See Attachment 1, page 1 1 of 12)

The position of each full length control rod [EIIS;ROD] is determined and displayed by the Digital Rod Position Indication (DRPI)[EIIS:AA](EDA) system. The system uses induction coils to determine the actual position and displays this information to the operator. The system receives both primary and backup power from unit 120vac nonessential panelboards [EIIS:EE](EPF). Therefore neither the primary nor the backup power source are available during a LOOP event.

The Reactor Protection System [EIIS:JC](IPE) includes numerous reactor trip signals to shut down the reactor. For a Loss Of Offsite Power (LOOP) event, any of the following could be expected as the initiating trip signal.

1. Reactor Coolant [EIIS:AB]Pump [EIIS:P](NCP) bus underfrequency on at least two out of four busses NCP bus undervoltage on at least two out of four busses

2. Reactor Coolant System (NCS) Loop low flow in any loop with reactor power at least 48%

3. At least two of the four Narrow Range (NR) level indications in any

Steam Generator [EIIS:SB](S/G) at low-low level

The Engineered Safety Features Actuation System [EIIS:JE](ESFAS) includes numerous actuation signals to actuate safeguards in the event of potential challenges to the safety of the NSSS. For the Loss Of Offsite Power event, the following ESFAS signals were received. The Auxiliary Feedwater [EIIS:BA](CA) System received a signal to start the two motor [EIIS:MO]driven pumps and the turbine [EIIS:TRB]driven pump as a result of the loss of power to the 4Kv Essential Buses [EIIS: EB](EPC).

Following the reactor trip, when the average reactor coolant temperature (Tave) decreased to 564 degrees F, the Main Feedwater [EIIS:SJ](CF) System received an isolation signal. A Safety Injection [EIIS:NI](SI) Signal was generated when pressure in at least one of the four main steamlines [EIIS:SB](SM) decreased to at least 775psig on two of the three pressure channels. The SI signal generated a Phase A containment isolation signal.

A Main Steam [EIIS:SB] Isolation Valve [EIIS:ISV](MSIV) is provided in each steam line immediately downstream of the ASME code safety valves to isolate any single S/G from the other three in the event of an accident affecting that one S/G. Closure of these valves also isolates intact S/Gs from a depressurization of the pressure equalization header which connects all four steam lines downstream of the MSIVs. In addition, each steam line has a Power-Operated Relief Valve (PORV) upstream of the safety valves. This valve automatically opens at 1 125 psig and closes at 1092 psig to prevent or reduce challenges to the higher setpoint safety valves. The PORV(s) can be manually controlled by the operator to cool down the plant in the absence of the capability to dump steam to the condenser [EIIS:COND]. Between the MSIVs and the main turbine [EIIS:TRB] stop valves [EIIS:ISV] are numerous steam loads. These include nine drain lines to the condenser which have valves that fail open after a loss of offsite power and the second stage moisture separator reheaters' [EIIS:SB](HM) motor operated steam supply valves [EIIS:20], which fail as is.

The CA System is designed to start automatically in the event of loss of electrical power, trip of both main feedwater [EIIS:SJ] pumps [EIIS:P], safety injection signal, low-low S/G level or ATWS Mitigation System Actuation Circuit (AMSAC) signal; any of which may result in, coincide with, or be caused by a reactor trip. The CA System will provide the required minimum flow requirements regardless of any single failure. The CA System is the only source of feed to the S/Gs for decay heat removal when the CF pumps become unavailable. Redundancy is provided by using three CA pumps powered from separate diverse power sources. The two motor driven pumps are powered from the 4Kv Essential busses, ETA and ETB. Each Motor Driven CA Pump (MDCAP) is normally aligned to supply feedwater to two S/Gs. The A MDCAP is aligned to S/Gs A & B. The B MDCAP is aligned to S/Gs C & D. One Turbine Driven CA Pump (TDCAP), supplies feedwater to S/Gs B & C, and is driven from steam supplied by either of these two S/Gs. If desired the TDCAP can be aligned to supply feed to S/Gs A or D from the control room. The MDCAPs can be aligned to supply feed to other S/Gs using manual isolation valves.

Normal NCS pressure control is provided for by Pressurizer [EIIS:PZR](PZR) heaters [EIIS:HTR] and PZR spray valves[EIIS:PCV]. If pressure exceeds the capability of the spray valves to reduce pressure, three PZR Power-Operated Relief Valves (PORVs) are provided to prevent or reduce challenges to the higher setpoint ASME code safety valves. During a LOOP event, with no differential pressure being provided by the NCPs to provide flow through the spray valves, the PZR PORVs operate automatically to limit pressure. The PORVs discharge to the Pressurizer [EIIS:PZR] Relief Tank [EIIS:TK](PRT) located in lower Containment. Steam discharged to the PRT enters through a sparger pipe located under the normally maintained water level. The steam mixes with the near ambient temperature water, thus condensing and cooling the steam. If the volume of steam and/or water discharged to the PRT exceeds that which can be quenched, and pressure in the PRT rises, overpressure protection is provided by two rupture discs[EIIS:RPD]. When pressure is relieved via the rupture disc(s), the energy is released into lower Containment.

During normal operation, temperature in Containment is controlled by ventilation units located in upper [EIIS:CD](VR) and lower [EIIS:BK](VL) Containment. During LOOP events, containment ventilation units are automatically sequenced on, but Containment Chilled Water (EIIS:BI](RV) is not supplied. Cooling water can be supplied from Nuclear Service Water [EIIS:BI](RN).

Catawba utilizes an ice condenser system to limit the initial peak pressure in containment to 14.7psig in the event of a LOCA. The system functions to absorb thermal energy by passing the abrupt release of steam and water through baskets of borated ice. After the initial incident, the ice condenser functions to further absorb energy causing pressure to be reduced to and held at a lower value. The lower inlet doors of the ice condenser are designed to fully open on a differential pressure of 1psf. Lesser differential pressures may result in the partial opening of doors. The increase in lower containment temperature due to loss of cooling water to the ventilation units during the LOOP resulted in a very small pressure increase. Later, the opening of the rupture disc on the PRT as a result of PZR PORV operation was sufficient to raise containment pressure to 0.9psig. This resulted in partial opening of some, but not all lower inlet doors.

EVENT DESCRIPTION

February 6, 1996

1230:49 Hours X phase potential transformer for 2A Main Transformer shorts to ground.

Z phase potential transformer for 2B Main Transformer shorts to ground.

Phase to phase ground actuates protective relaying for 2A

and 2B Main Transformers.

All AC power is lost. The reactor trips on 2 out-of

4-Underfrequency - NC Pumps.

Turbine trips on reactor trip.

1230:57 Hours Undervoltage on 4Kv Essential Busses 2ETA and 2ETB

initiates auto-start to D/G 2A and 2B. Turbine Driven

Emergency Feedwater Pump (TDCAP)starts. 2A D/G

auto-starts as required. 2B D/G is inoperable due to

battery charger work in progress.

1230:58 Hours 2A D/G reenergizes 4Kv Essential Bus 2ETA. Blackout loads

begin sequencing on as expected.

1231:04 Hours 2A S/G is being supplied 2A MDCAP. 2B S/G is being

supplied from both 2B MDCAP and the TDCAP.2B S/G is being

supplied from the TDCAP. 2D S/G is not being supplied

from any source. 2A, 2B, 2C and 2D S/G pressures begin to

decrease.

1231:19 Hours All blackout load groups for 2ETA are energized as

expected.

1232:45 Hours CF Isolation occurs as expected on Reactor Trip with Low

Tave.

Approximately Manual MSIV closure was initiated as directed by the

1236 Hours Emergency Procedure in effect.

1238:28 Hours SI automatically initiates on Low Steam Line Pressure in 2A S/G. Auto sequencing begins loading LOCA loads on 4Kv Essential Bus 2ETA. 4Kv Essential Bus 2-ETB remains without power.

1238:50 Hours All LOCA load groups for 2ETA are energized as expected.

1243 Hours A Notification Of Unusual Event (NOUE is declared in accordance with the site Emergency Plan for LOSS OF POWER

1247 Hours Pressurizer Power Operated Relief Valve (PORV) 2NC34A begins to cycle periodically as expected to limit NCS pressure.

1257 Hours Notification is sent to activate the Technical Support Center (TSC) and the Operational Support Center (OSC).

1300 Hours Criteria is met for SI termination.

1307 Hours ECCS flow to the NCS is terminated.

1310 Hours PZR level is off scale high. The NCS is water solid.

1320 Hours PRT pressure increases. The PRT rupture disc "blows" as expected as 2NC34A continues to cycle, limiting NCS pressure. 1339 Hours The TSC and OSC are activated.

1357 Hours Normal NCS letdown is established.

1522 Hours 4Kv Essential Bus 2ETB is energized from 2B D/G.

1800 Hours 4Kv Essential Bus 2ETB source is transferred from 213 D/G to transformer SATB, which is being powered from a unit1 B

Train offsite power source.

1810 Hours 2B D/G is secured.

1926 Hours A steam bubble is formed in the pressurizer.

2000 Hours 4Kv Essential Bus 2ETA source is transferred from 2A D/G to transformer SATA, which is being powered from a unit 1 A Train offsite power source.

2117 Hours Automatic SI initiation logic is reestablished.

2125 Hours Natural Circulation cooldown is initiated.

February 7, 1996

0445 Hours Unit 2 enters Mode 4, Hot Shutdown.

1702 Hours Unit 2 enters Mode 5, Cold Shutdown. T.S. 3.6.1.4 Action for Containment Pressure is exited.

February 8, 1996

0120 Hours Main Transformer 2B is reenergized from offsite via the 230KV switchyard.

0215 Hours The site exits the Emergency Plan for LOSS OF POWER and terminates the NOUE.

CONCLUSION

The root cause of the event is attributed to the application of the type of resistor bushings used. A deficiency lies in the use of these resistor bushings in a vertical orientation at the bottom of vertical branch-lines of the Isolated Phase Bus ducting leading to the potential transformers. The outdoor location and lack of air flow within this portion of the ducting, is conducive to moisture intrusion and corrosion. A contributing factor was the lack of adequate preventative maintenance to prevent moisture intrusion/condensation problems.

Upon loss of offsite power, the undervoltage on buses 2ETA and 2ETB initiated response of the respective load sequencers as expected. 2A D/G started and blackout loads were applied to 2ETA as expected. 2B D/G did not start because of its pre-event inoperability, therefore no blackout loads were applied to 2ETB.

The LOOP event caused power to be lost to the DRPI system. A reactor trip was ensured by observing the reactor trip breakers being open, intermediate range neutron flux was decreasing, and startup rate was negative. The Control Room Operators responded to the absence of rod position indication by initiating boration from the Boric Acid Tank to the Volume Control Tank, since the normally available Emergency Boration valve, 2NV236B, was without power. The positive indications of a reactor trip were sufficient to satisfy the Control Room Operators that an Anticipated Transient Without Scram (ATWS) event was not in progress. The actions to initiate boration were sufficient to initially counter the reactivity effects of any full length control rod(s) that may not have fully inserted. When power was restored to DRPI, it was confirmed that all full length control rods had in fact fully inserted on the reactor trip.

Loss of the ability to reject heat to the main condenser resulted in heat rejection to the atmosphere via S/G PORVs. This is an expected response for a LOOP event when cooling water to the main condenser is lost and low vacuum results.

Only three of the four S/G automatically received CA flow. This is an expected response for cases where only one of the two motor driven CA pumps and the turbine driven CA pump start.

Following the initial heat removal by the S/G PORVs, pressures in the S/G continued to decrease. This is attributed to the combined effects of air operated steam drain valves on the main steam lines which fail open as a result of loss of power to their solenoids, motor operated steam supply valves to the second stage moisture reheaters which fail as is (open) due to loss of power to their motors and unthrottled CA flow to the S/G. The Main Feedwater Isolation which occurred was an expected response to Low Tave with a reactor trip signal present.

The Control Room Operators responded properly by manually closing the MSIVs for all four S/Gs. This is procedurally addressed as a step to mitigate the effects of decreasing pressures in the S/Gs. Following manual closure of the MSIVs, S/G pressures continued to decrease because S/G levels had not yet increased to the setpoint which allows for throttling CA flow. The Low Steamline Pressure SI and SM Isolation occurred as expected when at least one of the four S/Gs' pressures dropped to 775psig.

As a result of the LOOP event, power was lost to several valves in the normal NCS charging line flowpath, causing them to fail open. Specifically, 2NV294 which controls total charging flow, and 2NV309 which controls NCP seal injection flow. These valves failing open resulted in mass addition to the NCS at a rate greater than the offsetting effects of NCS cooldown due to steam loads and CA flow.

The 2A D/G Load Sequencer responded as expected for the SI signal, by load shedding the blackout loads and sequencing on the LOCA loads. Since the 2B D/G was still inoperable, no B Train LOCA loads were applied. The SI signal not only provided for starting of ECCS pumps, but also sent signals directly to valves which, by design, either opened to provide for ECCS flow paths or closed to isolate normal makeup paths or flowpaths through which inventory losses may occur. Among the paths isolated was normal NCS letdown. The added mass through the ECCS flow path to the NCS caused pressure in the NCS to begin increasing. The resultant increase in pressure was mitigated by PZR PORV, 2NC34A.

Containment temperature increased in response to the loss of Containment Chilled Water to the ventilation units.Containment Chilled Water is not a blackout load. The increase in temperature caused an increase in pressure. This resulted in transition to the loss of reactor or secondary coolant procedure, based on indications that the NCS, may not be intact. Criteria for SI termination was met and the transition made to the SI termination procedure.

The Control Room Operators began termination of SI when the criteria was satisfied. Upon resetting of ECCS and terminating SI, the Operators began restoration of normal NCS charging and letdown. Since power had not been restored to 2ETB, the charging and seal injection control valves were still failed open. Procedure steps provide for throttling of manual valves to establish charging and seal injection under these conditions.

Prior to establishing the proper flows, Pressurizer level increased to the point of steam bubble collapse resulting in the NCS being water solid. The response of 2NC34A to control NC pressure in a water solid condition subsequently resulted in the pressurization of the PRT to the point of opening of the PRT to lower containment via the rupture disk. This resulted in a further increase in lower containment pressure to a peak of 0.9psig. This increase in pressure was sufficient to partially open some, but not all of the ice condenser lower inlet doors. Energy absorption was limited to contact with ice in the lowest portion of the ice condenser. There

was no flow through the ice condenser which resulted in the opening of the intermmediate or upper deck doors.

Following restoration of letdown, Essential Bus 2ETB was energized from 2B D/G. Power was restored to loads as necessary to establish NCS inventory and pressure control from the Control Room. Upon aligning Unit

1 to supply train related offsite power to shared transformers SATA and SATB, power to 2ETA and 2ETB was transferred to their respective shared transformers. 2A and 2B D/Gs were then shutdown. Actions were taken to establish a steam bubble in the Pressurizer and commence a cooldown to Mode 5 (Cold Shutdown).

The decision to cooldown using natural circulation was based on information that repairs necessary to restore the unit's own main transformers and buslines was anticipated to require several days.

A review of reportable events for the 24 months prior to the Unit2 LOOP event on February 6, 1996, indicated that there was one event attributed to a component failure. LER 414/95-001 describes a reactor trip that resulted from the closure of an MSIV at power. An optical isolator in the control circuit for the MSIV was identified as the failed component. The mechanism of failure was attributed to defective materials. Since the component that failed and the cause of the failure are different for this event, the LOOP event is not considered to be recurring.

CORRECTIVE ACTIONS

IMMEDIATE

1. Upon loss of offsite power, Emergency Procedure EP/2/A/5000/E-0, Reactor Trip or Safety Injection was entered. It was noted that DRPI was not providing indication of control rod position. It was decided that entry into EP/2/A/5000/ES-S.1, Response to Nuclear Power Generation/ATWS, was not required, since sufficient indication

of a successful reactor trip existed.

2. It was diagnosed that an SI had not occurred and was not required, therefore EP/2/A/5000/ES-0.1, Reactor Trip Response, was entered. As directed by procedure, in response to decreasing S/G pressures, all MSIVs were manually closed. Following closure of the MSIVs, an automatic Si occurred when steamline pressures continued to decrease. As directed by EP/2/A/5000/ES-0.1, when the SI occurred, a transition back to EP/2/A/5000/E-0 was made.

3. Concurrent with the transition to EP/2/A/5000/E-0, an effort to restore power to 2ETB using AP/2/A/5500/07, Loss of Normal Power, was unsuccessful due to procedural inadequacy.

4. Upon re-entering EP/2/A/5000/E-0, the Control Room Operators performed a verification that the NCS was intact. One of the criteria for being intact is "containment pressure - less than 0.3psig". Containment pressure was 0.34psig. The operators made the transition to EP/2/A/5000/E-1, Loss of Reactor or Secondary Coolant.

5. EP/2A/5000/E-1 was entered and the Operators determined that SI termination criteria was met. The transition was made to EP/2/A/5000/ES-1.1, Safety Injection Termination.

6. The Technical Support Center and the Operational Support Center were activated. The decision was made not to activate the Emergency

Operations Facility.

SUBSEQUENT

1. SI was terminated in EP/2/A/5000/ES-1.1 and the procedure was followed to completion. Actions in EP/2/A/5000/ES-1.1 included systematically securing ECCS pumps, establishing normal charging and letdown, checking for offsite power available, and since no NCP(s) were running or could be started, natural circulation was verified. Prior to determining the required plant recovery procedure, EP/2/A/5000/ES-1.1 checks that PZR level is less than 92 percent. Since the NCS was water solid, the operators referred to EP/2/A/5000/FR-1.1, Response to High Pressurizer Level, to ensure actions were being taken to reduce PZR level. Since cooldown to Mode 5 (Cold Shutdown) was required, the Operators appropriately transitioned to EP/2/A/5000/ES-0.2, Natural Circulation Cooldown. Prior to transition to EP/2/A/5000/ES-0.2, Natural Circulation Cooldown, 4Kv Essential Buses 2ETA and 2ETB were energized from offsite power, using shared transformers SATA and SATB.

2. The unit entered Mode 4 (Hot Shutdown) on February 7, 1996 at 0445 hours and Mode 5 (Cold Shutdown) at 1702 hours.

3. On February 8, 1996, at 0215 hours, the site terminated the NOUE.

4. Prior to unit 2 restart, the following actions were taken:

a. Each of the six (one per phase for each of the two main transformers) resistor bushings was replaced with a newer design which has an external resistor.

b. All portions of the Isolated Phase Bus ductwork were inspected for water tightness, including welds. Repairs were made as necessary.

c. Each of the phases of the Isolated Phase Bus was Doble tested to ensure acceptable conditions existed prior to restoration to service.

d. In consideration of the electrical fault that was the initiating event, the unit's generator breakers were inspected and repaired as necessary. Only 2B breaker required repairs. It was operating time tested as a result of the necessary repairs.

e. Abnormal Procedure AP/2/5500/07, Loss of Normal Power, was revised to allow restoration of power from shared transformers SATA and SATB in a more timely manner.

5. Offsite power was restored to the unit 2 main and auxiliary transformers from the unit's associated buslines fed from the 230kv switchyard. All electrical power alignments were restored to the unit's normal configuration.

6. For unit 1, the following actions were taken with the unit at power:

a. Each of the six (one per phase for each of the two main transformers) resistor bushings was replaced with a newer design which has an external resistor.

b. All portions of the Isolated Phase Bus ductwork were inspected for water tightness, including welds. Repairs were made as necessary.

c. Abnormal Procedure AP/1/5500/07, Loss of Normal Power, was revised to allow restoration of power from shared transformers SATA and SATB in a more timely manner.

7. The unit 2 ice condenser was inspected and baskets weighed to ensure the minimum weight requirements were met. No baskets were found to have less than the minimum required mass of ice.

PLANNED

1. The current preventative maintenance programs for the IPB system and transformer yard equipment will be enhanced to ensure continued equipment reliability. Enhancements should include measures to protect against the effects of moisture and condensation.

SAFETY ANALYSIS

This event was evaluated with respect to the Final Safety Analysis Report (FSAR) accident analysis. The event had four major occurrences which have been considered with respect to the accident analysis:

1. LOOP
2. NCS overcooling due to excessive secondary side heat removal
3. Pressurizer overfill with liquid relief to the PRT
4. PRT rupture disc opening and mass energy addition to Containment

The LOOP resulted in a reactor trip and loss of forced flow in the NCS.

Both of these events are considered in the FSAR section 15.2.6 analysis.

A LOOP is bounded by other events with respect to minimum DNBR, peak NCS pressure, and peak secondary system pressure. These events are contained in section 15.2, Decreases in Secondary System Heat Removal. The inclusion of LOOP in this section is based on NUREG-800 Standard Review Plan (SRP) categorization ATTACHMENT 1 TO 9603120449 PAGE 1 OF 2

Duke Power Company (803)831-3000

Catawba Nuclear Station

4800 Concord Road

York, SC 29745

DUKE POWER

March 7, 1996

U. S. Nuclear Regulatory Commission

Document Control Desk

Washington, D.C. 20555

Subject: Catawba Nuclear Station

Docket No. 50-414

LER 414/96-001

Gentlemen:

Attached is Licensee Event Report Loss of Off-Site Power Due to Electrical Component Failures.

This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

W. R. McCollum, Jr.

Attachment

cc: Mr. S. D. Ebneter INPO Records Center

Administrator, Region II 700 Galleria Place

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NSRB Staff EC05N

NC MPA-1

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SREC

J. W. Glenn CN05SR (with Enclosures)

K. E. Nicholson CN01RC (with Enclosures)

SRG File CN05SR (with Enclosures)

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